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ABSTRACT

While interest in second language vocabulary knowledge has increased, vocabulary testing remains largely confined to the quantitative measurement of discrete items. More qualitative measures are needed to assess how well particular words are known. Research has characterized word knowledge in two ways: as a set of components or aspects, and as an ordered series of levels or stages. In an effort to find measures reflecting the quality or depth of vocabulary knowledge, an interview procedure is being developed for use with second language learners arriving in New Zealand for academic study. Thirty nouns and 30 verbs of low frequency were selected from a list of non-technical academic vocabulary. In pilot testing, these words were presented as a checklist, with the respondents noting that they knew, did not know, or were unsure of the words. Interviewers elicited information about the respondent's ability to pronounce the word, explain its meaning, identify the relevant field of study to which it belongs, name other words associated with it, and give other forms of it. Analysis of the responses raised questions about the type of definition given, presentation of the words, examiner response to examinees' confusion, and methods of prompting additional meanings. Further test development is under way. (MSE)

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TOWARDS A DEEPER ASSESSMENT OF VOCABULARY KNOWLEDGE

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We have seen in the 1980s a renewed recognition of the importance of vocabulary learning in second language acquisition following a period when, on the one hand, researchers restricted their attention largely to the development of grammatical structure and, on the other, language teaching specialists were preoccupied with higher order skills and communicative competence.

A clear sign of the new status of vocabulary in English language teaching is the appearance in recent years of numerous books that offer fresh approaches to the learning of word meaning and plenty of exercise material to help learners to master the use of key lexical items (see e.g. Rudzka et al 1981, Yorkey 1981, Allen 1983, Sim & Laufer-Dvorkin 1984). However, these developments in language teaching are only slowly being reflected in language testing practices. To the extent that vocabulary testing is being done, it seems to involve very little reappraisal of the purpose(s) of such tests and the types of items to be used. The standard practice is to select a group of words that are suitable for the purpose and then to test each one in isolation or in a limited sentence context, using formats such as multiple choice, matching, picture labelling, completion (blank-filling) and translation. Essentially the testee's task is to match the word with a suitable synonym or dictionary-type analytic definition. The problem here is the implication that each word has just one meaning and that knowledge of a word is functionally equivalent to being able to recognize or recall a short analytic definition. There is also the question of whether conventional

"vocabulary" tests assess the testees' ability to apply their knowledge of words when they encounter them in whole texts, although admittedly this ability is evaluated to some extent in "reading comprehension" tests.

Multiple choice, matching and other standard vocabulary test formats such as the checklist are suitable for certain purposes, particularly for estimating how many words the learners know and thus how extensive their vocabulary knowledge is (Read & Nation 1986). However we also need to have more qualitative measures of how well particular words are known. This is especially important when we can draw up an inventory of key items such as the sub-technical vocabulary of university textbooks and other academic writing (Xue & Nation 1984). These are words that learners of English for academic purposes have to know well as an essential component of successful reading comprehension.

The question, then, is how we can usefully test **depth** of knowledge of these words and find out how well they are known. It is not simply a matter of proposing new item types or formats but rather seeking a better understanding of the nature of the learners' vocabulary knowledge. There is a long tradition of research on the vocabulary acquisition and knowledge of young native speakers of English but such studies are lacking in the case of second language learners. This kind of research is needed to support the development of more valid and functional tests of vocabulary.

What is involved in knowing a word?

It is commonly assumed that we can make an either-or judgement about learners' knowledge of a word: it is either known or not known - or, at least at some point, the learners' knowledge can be considered adequate or "complete". While such an assumption may be convenient for testing purposes, it does not satisfactorily reflect the complexity of what is involved in knowing a word. Writers on vocabulary characterize the composition of word knowledge in two complementary ways:

- a as a set of components or aspects; or
- b as an ordered series of levels or stages.

Let us consider some examples of each approach in turn.

a Components or aspects of word knowledge

Cronbach (1942) identified five sorts of behaviour involved in understanding a word. These were

- i generalization: being able to define the word
- ii application: selecting an appropriate use of the word
- iii breadth of meaning: recalling the different meanings of the word
- iv precision of meaning: applying the word correctly to all possible situations
- v availability: being able to use the word productively.

In a survey of vocabulary testing up until that time, he found that most tests focused only on generalization or application. The other three aspects of word knowledge had been recognized by previous writers as being important but it was a matter of some debate whether these aspects could or should be formally tested.

Rather more recently, in an article on second language vocabulary teaching, Richards (1976) summarized an even wider range of aspects of vocabulary knowledge, such as knowing

- the relative frequency of the word
- the syntactic properties of the word
- the underlying form and its derivations
- the network of associations with other words
- the connotations of the word.

He emphasizes the importance of having "a rich concept of vocabulary" in the preparation of teaching materials, and the same should presumably apply to vocabulary testing.

Working with much the same range of features as Richards, Nation (1984) has devised an elegant table of key questions that define the extent of a person's knowledge of a word (Table 1). The questions are classified in terms of the four criteria of form, position, function and meaning. One significant aspect of the table is the incorporation of the receptive-productive distinction in all four categories of questions. This distinction can be seen as representing different types of word knowledge; it may also be regarded as characterizing different stages or levels, as we will see later.

b Levels or stages of vocabulary development

In a survey of research on the measurement of native speaker vocabulary, Dale (1965:898) outlines four stages on the continuum of knowing a word. It starts with encountering a word that you have never seen before, such as (for most adult native speakers) bittles, polentular or fudular. The second stage is to recognize

form	spoken form	R	What does the word sound like?
		P	How is the word pronounced?
	written form	R	What does the word look like?
		P	How is the word written and spelled?
position	grammatical patterns	R	In what patterns does the word occur?
		P	In what patterns must we use the word?
	collocations	R	What words or types of words can be expected before or after the word?
		P	What words or types of words must we use with this word?
function	frequency	R	How common is the word?
		P	How often should the word be used?
	appropriateness	R	Where would we expect to meet this word?
		P	Where can this word be used?
meaning	concept	R	What does the word mean?
		P	What word should be used to express this meaning?
	associations	R	What other words does this word make us think of?
		P	What other words could we use instead of this one?

TABLE 1 Knowing a word

form	spoken form	R	What does the word sound like?
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		P	What other words could we use instead of this one?

TABLE 1 Knowing a word

that such a word exists but not know what it means. Examples suggested by Dale include swingle-tree, antidisestablishmentarianism and serendipity. The next stage is "a vague contextual placing of the word". You know that hustings has to do with elections, but have no specific knowledge of its meaning. This and other words like kith and kin and pied piper are in a "twilight zone", between recognition and knowledge. At the fourth stage, we "know" the word; "we have pinned [it] down". But then there is in effect a further stage of being able to distinguish words that are related in meaning and/or form, such as irony, sarcasm and satire; sympathy and empathy; and pride and arrogance. Dale suggests that different types of vocabulary test focus on different stages of the continuum and thus it is not surprising that they produce discrepant estimates of the extent of a person's vocabulary knowledge.

Research on children's vocabularies has shown a clear developmental sequence in terms of the types of definitions favoured by children at different ages. For example, Feifel and Lorge (1950) analysed the responses given in the word definition section of the Stanford-Binet Test, which requires oral definitions of words presented in isolation. They found that children aged 6 or 7 relied more on use and description in defining the words, rather than explanation. In contrast, children between the ages of 10 and 14 gave synonyms and exploration type responses, as they defined words in more abstract and generic terms.

A later study by Russell and Saadeh (1962) involved the construction of multiple choice items in which the testees were presented with a concrete, a functional and an abstract definition of each word to be tested. Among third graders the concrete and functional

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definitions were generally chosen, whereas at the sixth and ninth grade levels there was a significant decline in the number of concrete responses and a corresponding increase in the selection of functional and abstract definitions.

The results of such studies seem to reflect the effects of cognitive development, rather than representing any necessary sequence in the acquisition of vocabulary knowledge. Second language learners beyond the age of puberty are not confined to concrete modes of thought and can presumably handle abstract definitions of words from the beginning. However there appears to be a lack of empirical evidence to support this commonsense conclusion.

Another type of developmental sequence may be represented by the distinction between receptive and productive (or active and passive) vocabulary. It is widely accepted that, not only do we recognize and understand many more words than we actually use ourselves, but we also tend to know less about the words in our receptive vocabulary than those that are productive. Thus, the standard view among researchers on first language vocabulary acquisition is that comprehension of words precedes their production (although there is considerable debate about the extent and significance of the gap between the two). From a developmental viewpoint, then, a word is initially known receptively before it passes into the user's productive vocabulary.

However, in a critical review of the receptive-productive distinction, Melka Teichroew (1982) shows how unsatisfactory the efforts of vocabulary researchers have been to define the difference in operational terms, or even to specify clearly what the distinction is at the conceptual level. She argues that

any attempt to classify words as being receptively or productively known results in an arbitrary division of a person's vocabulary. Instead, we should conceive of vocabulary knowledge as a continuum of degrees of familiarity with words. Words that are more familiar will be better known and thus more likely to be used, but we should not expect to be able to identify a specific point or degree of familiarity at which a word makes the transition from "receptive vocabulary" to "productive vocabulary".

We can see, then, that the literature on the nature of vocabulary knowledge gives us a theoretical basis for broadening the scope of vocabulary testing. However, the majority of the research studies have taken as their subjects school children who are native speakers of the language whose vocabulary they are acquiring. What is needed now is research on second language learners at the secondary school level and above to find out what they know about selected words in their second language and how they express that knowledge in their own terms. This involves moving beyond simple quantitative measures of the number of "words" in a person's vocabulary to a more qualitative investigation of how well key words are known. The aim is to identify measures that best reflect the quality of vocabulary knowledge and are at the same time practicable for use in vocabulary tests.

Developing of an interview procedure

To this end, together with my colleagues Paul Nation and Annette Visser, I have been working on the development of an interview procedure to elicit data on vocabulary knowledge from second language learners - specifically from overseas students coming to New Zealand for the purposes of academic study. Much

of the work so far has been concerned with working out how to structure and conduct such interviews, and thus most of what I have to report so far involves methodological questions rather than substantive results. However, given the lack of previous research of this kind with second language learners, a preoccupation with procedural matters at this stage is presumably inevitable.

Since we are interested in vocabulary for academic purposes, the words we have been working with are those found in the University Word List (Xue & Nation 1984), a compilation of non-technical words in academic texts, based principally on the results of frequency counts by Campion and Elley (1971) and Praninskas (1972). The initial procedure was to select words from the lower frequency range of the list, on the assumption that these were the items that the subjects were most likely to be unsure about or have only partial knowledge of. Thirty nouns were chosen for use by one interviewer and thirty verbs by another. Thirty words was too many to be covered in a half-hour interview, but the intention was to focus mainly on the items that were less well known to the individual subject.

Some thought was given to the question of how to present the words initially to the subjects in the interview. Two basic options were:

- a aural versus visual presentation; and
- b words in isolation versus words in context.

With regard to the first option, we are more concerned with reading than listening comprehension, and thus the words were presented in written form. However, one of the first questions in the interview was a request to pronounce the word, which gave some indication of the subject's familiarity with its spoken form.

As for the second issue, it was decided to present the words first in isolation, in order to see what knowledge the subject had of each word as an independent unit and to control the often unpredictable effects of context on the interpretation of word meaning. The subject's ability to understand the word in context was left to a later stage.

In the interview, then, the words were presented in the form of a checklist with three columns marked Yes, Not Sure and No to indicate whether each word was known. A "Yes" response was defined in the rubric as indicating that "You have seen the word before and can understand it when you read it in a book". Words that received ticks in the Not Sure and No columns were the initial focus of attention and then knowledge of other words on the list was elicited as time permitted.

For the interview itself, a set of questions was devised to be used selectively by the interviewer in eliciting information about each word. The questions covered:

the ability to pronounce the word

the explanation of what the word means

the identification of the field(s) of study to which the
word belongs

the naming of other words with which this one collocates
or is associated

knowledge of other forms of the word

At the time when the interview procedure was developed, there was no English proficiency course in session at our Institute and so the initial interviews were conducted with ten non-native-speaking teachers of English on the Diploma in TESL course. The interviews

each lasted for about half an hour and were tape-recorded for later analysis.

Analysing the responses

A preliminary analysis of the responses to the words was undertaken in order to classify in broad terms the types of definitions that were given. Many of the responses were in fact analytic definitions of the word in question. Some examples:

access "It's a way to go in"

myth "It's a kind of story um ... handed down from long ago and it's usually not true"

fossil "those things ... the remains of animals which have ... which lived a very long time ago"

Since these subjects were themselves English teachers, they may have had a greater propensity to give an analytic type of definition, and it remains to be seen whether such definitions are so common among learners from various other academic backgrounds.

A second category of definition was the giving of a specific example of how the word is used, as in for instance:

margin "Like the piece of paper here the words are typed up on a(n) indented margin on the typewriter ... could be space, yeah?"

inflation "It's very common at the moment we have high inflation (laughs) ... on the news every day. It's hard to explain but is it ... buying power of your dollar?"

fossil "You know when you have trees they start falling and they keep on decompose and they turn into a kind of soil you call that fossil."

Of course, an example could also follow an analytic definition, as in:

access "When you have the ability to use for example library. If you have no access it means that you are not allowed to use the library."

A third way of defining the words, closely related to the second, was to offer common collocations. Examples of this type were as follows:

carbon "Carbon dioxide ... carbon copy."

cord "Electric cord ... extension cord."

"Musical chord ... umbilical cord for babies ... something to do with string or rope or something like that."

One other defining strategy should also be noted.

In the case of more technical words like integer, matrix and velocity, there was a tendency to identify the academic field with which they were associated.

integer "It's a frequent word in mathematics ... numbers."

matrix "Matrix too is to do with maths (laughs) ...

I often remember my maths ... they used to ask me 'What's the matrix of this?' you know ... they give us maths kind of problem to do with geometry and then we have ..."

velocity "This is the word they use in electronics ...

measurement they measure the velocity of electricity."

Apparently in these cases the field of study was the most salient feature of the subject's knowledge of the word.

In addition to the more or less correct definitions, there were a number of confusions between similar-sounding words:

access-excess, cord-chord, morale-morality

and also faulty hypotheses about the meanings of familiar-looking words, such as:

auspices - from spices?

faction - from fact?

subsidy - from subside?

One further observation is worth noting. In explaining the word inflation, one subject gave a definition related to the meaning "a rise in prices". Later, when asked if she could think of any other forms of the word, she seemed to think suddenly of inflate:

"Oh! inflate ... is it blow air into a tube or ... when you put air into a tube it inflates."

However, in response to a subsequent question, she did not know whether the noun inflation could be used with this meaning of blowing something up. Apparently for her the two forms of the word were each associated with a different meaning.

Several matters related to definition types require further investigation. The research on first language vocabulary acquisition shows very clearly that older students (beyond, say, the age of puberty) give predominantly the abstract, analytic type of definition because their level of cognitive development is higher than that of younger children, who give more concrete and descriptive explanations. If cognitive development is

the crucial factor, then, we should expect that older **second** language learners will also have a preference for abstract definitions to explain the vocabulary of their second language. Certainly in the preliminary interviews reported above, many analytic definitions were given, but there was also a considerable proportion of other types of definition. This gives rise to several questions:

- 1 Is an analytic definition always the best (most appropriate, most sophisticated) way of defining a particular word?
- 2 More specifically, does the choice of definition type depend on the kind of word that is being defined?

Some words lend themselves to concise, analytic definition; others, especially polysemous ones, can best be explained - even in dictionaries - by an inventory of examples of their use. In other cases, a picture, drawing or diagram may be the most effective means of communicating the "meaning" of a word.
- 3 If an analytic definition is given, does this mean that the learner knows the word well, whereas the use of other types of definition is an indication that the learner has only a partial understanding of the word? Identifying a word by means of the field of study or topic area it is used in would seem to be a case in point.
- 4 Are there individual differences among learners in their preference for one type of definition over another?

There is some indication from our preliminary data that certain learners tend to give highly analytic definitions, while others explain words more with examples of use.

This could reflect differences in cognitive style, or perhaps the amount of formal vocabulary learning (as distinct from informal acquisition of words) that the learner has done.

It seems important to seek some answers to these questions because of the possible implications for vocabulary testing. If we find that there are significant numbers of learners who do not naturally think of words in terms of their synonyms or their analytic definitions, these learners may be at a disadvantage in standard vocabulary tests. This would suggest the need for a wider range of formats for vocabulary tests, ones that offer greater diversity in the understanding and expressing of word meaning.

Improving the interview procedure

There were a number of problems with the first round of relatively open and unstructured interviews. First of all, psychologically it was not a good strategy to begin by eliciting information about the words that had received ticks in the Not Sure or No columns of the checklist. If there were a number of these words, the process of going through them with the interviewer tended in effect to highlight the apparent limitations of the subject's vocabulary knowledge and put her or him on the defensive. In one case, a subject became noticeably reluctant to talk about any words she was unsure of after it was pointed out to her (albeit gently) that she had confused the word "auspices" (admittedly the most unusual word in the list) with "hospices". It was

not so bad when the subject did in fact have some knowledge of the words, but in general reviewing the less known words first did little to boost the subjects' confidence.

This leads to a second problem: how to react when the subject explained a word wrongly, especially as a result of confusing it with another word? Should one simply accept the response given and pass on to the next word? Or should one point out the error, in case it was a mistake at the performance level and, having been informed of it, the subject was then able to explain the word correctly? In some cases, it was not obvious whether the subject was explaining the wrong word or just giving an unclear account of the right one. Take the following example, in response to the word "assets":

S: Is it something like ... you can ... a kind
of connection.

Interviewer: You mean, a relationship?

S: Yeah.

Interviewer: Can you give an example?

S: Roads, countries ...

It was difficult to know how to follow up such responses. When a word has obviously been confused with another one, there seems to be little purpose in pursuing it further and it is perhaps best to move on to the next item. On the other hand, this may alert the subjects to the fact that they have given "the wrong answer", which could inhibit them from speaking freely about later words that they are unsure of.

A third weakness of the initial interviews was that we lacked a procedure for cueing additional meanings of a word, apart from the open-ended prompt, "Do you know any other meanings of the word?" For example, the word "cord" has at least four meanings:

1. a string or rope; 2. a part of the body; 3. a set of electric wires; and 4. a type of cloth. When only one or two of these meanings were given by the subject, it was not easy to establish whether the other meanings were not known or simply not recalled. Similarly, we needed a means of probing the subjects' knowledge of specific uses or applications of the word, if these were not offered spontaneously.

In recognition of these and other problems with the initial interviews, we are now working on the development of a new procedure to be used in a more formal study, which will be conducted during the ELI English Proficiency Course this summer (1987-88).

In preparing for the interviews, the plan is to select several short accessible academic texts and then to identify in each one some words that are found in the University Word List. These words will form the basis of the interview. This time there will be no special effort to choose the less frequent words in the list, since our experience with the earlier interviews showed that asking the subjects about quite common words still yielded a great deal of useful information for our purposes. Besides, we will be able to interview during the summer course learners with lower levels of proficiency than the previous interviewees.

As before, the words from the texts will first be presented to the learners one by one in isolation, so that they have the opportunity to explain each one in their own way. In the case of words with two or more meanings, we will identify in advance meanings that the word is likely to have in academic writing and seek to elicit any of these meanings that are not given spontaneously by the subject - and in particular the meaning that the word has in the text from which it is taken. One method of doing

this is the technique used by Corson (1983) in his Measure of Passive Vocabulary, in which the testee is presented with the word (or "lexeme") to be tested, along with a key word which serves to cue the specific meaning that the researcher wishes to elicit. The key word is chosen to connote the relevant semantic field. For example, the field of the physical sciences, the measure includes the following items:

observe	(experiment)
solution	(mixed)
image	(mirror)
composition	(substance)

The subject is presented with the two words and then asked to use them both in an original sentence. A modified version of this technique will be suitable for us in eliciting particular meanings of the words included in our study.

Once again the subjects will be asked about the syntactic properties of the word, its associations with other words and its derived forms.

When the words from one of the texts have been investigated in this way, the text itself will be shown to the subject, who will be asked to explain the specific meaning that each word has in the text. Thus the procedure will move in a systematic way from looking at a word in isolation to encountering it in the context of academic writing.

We hope that this will prove to be a workable and productive method of assessing the quality of a second language learner's vocabulary knowledge and that ultimately it will provide a sounder basis for the development and validation of vocabulary tests.

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